

THE ASTROPHYSICAL JOURNAL  
CONTENTS OF VOLUME 440, PART 1

1995 FEBRUARY 10, Number 1

	<i>Page</i>	<i>Fiche</i>
FULLY COVARIANT COSMOLOGY AND ITS ASTROPHYSICAL IMPLICATIONS <i>Paul S. Wesson &amp; Hongya Liu</i>	1	41-C1
RADIAL ORBIT INSTABILITY IN A HUBBLE-EXPANDING UNIVERSE <i>Daniel D. Carpintero &amp; Juan C. Muzzio</i>	5	41-C8
INTERPRETATION OF GRAVITATIONAL MICROLENSING BY BINARY SYSTEMS <i>S. Mao &amp; R. Di Stefano</i>	22	41-D14
BRIGHTEST CLUSTER GALAXIES AS STANDARD CURVES <i>Marc Postman &amp; Tod R. Lauer</i>	28	41-E9
ABELL 548: AN X-RAY AND OPTICAL ANALYSIS OF SUBSTRUCTURE <i>David S. Davis, Christina M. Bird, Richard F. Mushotzky, &amp; S. C. Odewahn</i>	48	41-G9
A COMPARISON OF TWO ALGORITHMS FOR SIMULATING COLLISIONLESS SYSTEMS <i>Shunsuke Hozumi &amp; Lars Hernquist</i>	60	42-A10
A NEW METHOD FOR MEASURING THE H I GUNN-PETERSON EFFECT AT HIGH REDSHIFT <i>Yihu Fang &amp; Arlin P. S. Crofts</i>	69	42-B8
ULTRAVIOLET SPECTROPOLARIMETRY OF HIGH-REDSHIFT QUASARS WITH THE HUBBLE SPACE TELESCOPE <i>C. D. Impey, Matthew A. Malkan, Wayne Webb, &amp; C. E. Pery</i>	80	42-C8
DETECTION OF COMPACT ULTRAVIOLET NUCLEAR EMISSION IN LINER GALAXIES <i>Dan Maoz, Alexei V. Filippenko, Luis C. Ho, Hans-Walter Rix, John N. Bahcall, Donald P. Schneider, &amp; F. Duccio Macchetto</i>	91	42-D9
HOT ACCRETION DISKS WITH NONTHERMAL PAIRS <i>Masaaki Kusunose &amp; Shin Mineshige</i>	100	42-E7
EMISSION-LINE PROFILES FROM SELF-GRAVITATING THIN DISKS <i>V. Karas, A. Lanza, &amp; D. Vokrouhlický</i>	108	42-F4
RAPID POLARIZATION VARIABILITY IN INTENSE SOURCES <i>R. T. Gangadhara &amp; V. Krishan</i>	116	42-G1
PURE SCATTERED EMISSION AS AN EXPLANATION FOR THE HARD X-RAY SPECTRA OF ACTIVE GALACTIC NUCLEI <i>E. Jourdain &amp; J. P. Roques</i>	128	43-A2
LOW-LUMINOSITY ACTIVE GALAXIES: ARE THEY SIMILAR TO SEYFERT GALAXIES? <i>A. Koratkar, S. E. Deustua, T. Heckman, A. V. Filippenko, L. C. Ho, &amp; M. Rao</i>	132	43-A9
DUST IN THE BROAD-LINE REGIONS OF SEYFERT GALAXIES <i>Robert W. Goodrich</i>	141	43-B7
FAINT OBJECT CAMERA IMAGING AND SPECTROSCOPY OF NGC 4151 <i>A. Boksenberg, R. M. Catchpole, F. Macchetto, R. Albrecht, C. Barbieri, J. C. Blades, P. Crane, J. M. Deharveng, M. J. Disney, P. Jakobsen, T. M. Kampermann, I. R. King, C. D. Mackay, F. Paresce, G. Weigelt, D. Baxter, P. Greenfield, R. Jedrzejewski, A. Nota, &amp; W. B. Sparks</i>	151	43-C6
REVERBERATION MAPPING BY REGULARIZED LINEAR INVERSION <i>Julian H. Krolik &amp; Christine Done</i>	166	43-D13
HOT SHOCKED GAS ALONG THE JETS OF NGC 4258 (M106) <i>G. Cecil, A. S. Wilson, &amp; C. De Pree</i>	181	43-F3
INTERMEDIATE-RESOLUTION SPECTROSCOPY OF THE RADIO GALAXY B2 0902+34 AT $z \approx 3.4$ <i>J. M. Martín-Mirónes, E. Martínez-González, J. I. González-Serrano, &amp; J. L. Sanz</i>	191	43-G2

	Page	Fiche
NEAR-INFRARED [Fe II] AND Pa $\beta$ IMAGING AND SPECTROSCOPY OF ARP 220 <i>L. Armus, D. L. Shupe, K. Matthews, B. T. Soifer, &amp; G. Neugebauer</i>	200	44-A3
NEW SYNTHETIC Mg <sub>2</sub> INDICES <i>M. Chavez, M. L. Malagnini, &amp; C. Morossi</i>	210	44-B3
VERY LOW MASS STARS AND WHITE DWARFS IN NGC 6397 <i>Francesco Paresce, Guido De Marchi, &amp; Martino Romaniello</i>	216	44-B13
HIGH-VELOCITY, HIGH-EXCITATION NEUTRAL CARBON IN A CLOUD IN THE VELA SUPERNOVA REMNANT <i>Edward B. Jenkins &amp; George Wallerstein</i>	227	44-C13
GAS PHASE ABUNDANCES AND CONDITIONS ALONG THE SIGHT LINE TO THE LOW-HALO, INNER GALAXY STAR HD 167756 <i>Jason A. Cardelli, Kenneth R. Sembach, &amp; Blair D. Savage</i>	241	44-E2
A METHOD OF SMOOTHED PARTICLE HYDRODYNAMICS USING SPHEROIDAL KERNELS <i>Michael S. Fulbright, Willy Benz, &amp; Melvyn B. Davies</i>	254	44-F4
SELF-TRAPPING OF SUPERFLUID VORTICES AND THE ORIGIN OF PULSAR GLITCHES <i>Yuko Mochizuki &amp; Takeo Izuyama</i>	263	44-G2
NEUTRON STAR ACCRETION AND BINARY PULSAR FORMATION <i>G. E. Brown</i>	270	44-G12
HIGH-MASS X-RAY BINARY POPULATIONS. I. GALACTIC MODELING <i>William W. Dalton &amp; Craig L. Sarazin</i>	280	45-A11
TESTS OF TWO CONVECTION THEORIES FOR RED GIANT AND RED SUPERGIANT ENVELOPES <i>Richard B. Stothers &amp; Chao-wen Chin</i>	297	45-C3
Ha EMISSION AND ABSORPTION FROM A LOCALIZED REGION ABOVE THE SURFACE OF A Be STAR <i>J. M. Marlborough</i>	303	45-C12
THE EFFECT OF OBLATENESS AND GRAVITY DARKENING ON THE RADIATION DRIVING IN WINDS FROM RAPIDLY ROTATING B STARS <i>Steven R. Cranmer &amp; Stanley P. Owocki</i>	308	45-D6
MODELING THE LIGHT-TRAVEL-TIME EFFECT ON THE FAR-INFRARED SIZE OF IRC +10216 <i>Edward L. Wright &amp; Frederick K. Baganoff</i>	322	45-E9
ORFEUS OBSERVATIONS OF AM HERCULIS <i>John C. Raymond, Christopher W. Mauche, Stuart Bowyer, &amp; Mark Hurwitz</i>	331	45-F7
A MULTICOLOR ECLIPSE STUDY OF THE CLASSICAL NOVA AQZ AURIGAE (NOVA AURIGAE 1964) <i>R. D. Campbell &amp; A. W. Shafter</i>	336	45-G1
ON THE CURRENT STATUS OF MASER POLARIZATION THEORY <i>Moshe Elitzur</i>	345	45-G13
OBSERVATIONS AND ANALYSIS OF O( <sup>1</sup> D) AND NH <sub>2</sub> LINE PROFILES FOR THE COMA OF COMET P/HALLEY <i>William H. Smyth, Michael R. Combi, Fred L. Roesler, &amp; Frank Scherb</i>	349	46-A6
SOLAR CORONAL DUST SCATTERING IN THE INFRARED <i>R. M. MacQueen &amp; Bradford W. Greeley</i>	361	46-B8
THE BRIGHT KNOTS AT THE TOPS OF SOFT X-RAY LOOPS: QUANTITATIVE RESULTS FROM YOHKOH <i>G. A. Doschek, K. T. Strong, &amp; S. Tsuneta</i>	370	46-C7
THE 1991 OCTOBER 24 FLARE: A CHALLENGE FOR STANDARD MODELS <i>J.-F. de La Beaujardière, R. C. Canfield, H. S. Hudson, J.-P. Wülser, L. Acton, T. Kosugi, &amp; S. Masuda</i>	386	46-E3
SEQUENCES OF CORRELATED HARD X-RAY AND TYPE III BURSTS DURING SOLAR FLARES <i>Markus J. Aschwanden, Maria L. Montello, Brian R. Dennis, &amp; Arnold O. Benz</i>	394	46-E14
MAGNETIC MERGING IN COLLIDING FLUX TUBES <i>Ellen G. Zweibel &amp; James E. Rhoads</i>	407	46-G3
THEORETICAL PROPERTIES OF $\Omega$ -LOOPS IN THE CONVECTIVE ZONE OF THE SUN. II. THE ORIGIN OF ENHANCED SOLAR IRRADIANCE <i>E. N. Parker</i>	415	47-A1
ELECTRON EXCITATION CROSS SECTIONS FOR THE $2s^2 2p^3 \ ^4S^o \rightarrow 2s^2 2p^3 \ ^2D^o$ (FORBIDDEN) AND $^4S^o \rightarrow 2s 2p^4 \ ^4P$ (RESONANCE) TRANSITIONS IN O II <i>M. Zuo, Steven J. Smith, A. Chutjian, I. D. Williams, S. S. Tüyal, &amp; Brendan M. McLaughlin</i>	421	47-A10

# CONTENTS

v

1995 FEBRUARY 20, Number 2

	Page	Fiche
EVIDENCE FOR SMALL-SCALE CLUSTERING IN A COLUMN-DENSITY-LIMITED SAMPLE OF THE LYMAN-ALPHA FOREST <i>Victor V. Chernomordik</i>	431	49-C1
THE IUE SURVEY FOR DAMPED LYMAN- $\alpha$ AND LYMAN-LIMIT ABSORPTION SYSTEMS: EVOLUTION OF THE GASEOUS CONTENT OF THE UNIVERSE <i>Kenneth M. Lanzetta, Arthur M. Wolfe, &amp; David A. Turnshek</i>	435	49-C8
SEARCH FOR CORRELATIONS OF LYMAN-ALPHA CLOUDS AND METAL SYSTEMS ON CLOSELY SPACED LINES OF SIGHT <i>R. M. Elowitz, Richard F. Green, &amp; Chris D. Impey</i>	458	49-E7
ANGULAR SIZE IN A STATIC UNIVERSE <i>David F. Crawford</i>	466	49-F4
THE CONTRIBUTION OF LOW SURFACE BRIGHTNESS GALAXIES TO FAINT GALAXY COUNTS <i>Henry C. Ferguson &amp; Stacy S. McGaugh</i>	470	49-F11
MAGNIFICATION OF QUASARS BY COSMOLOGICALLY DISTRIBUTED GRAVITATIONAL LENSES <i>Yichuan C. Pei</i>	485	50-A4
HUBBLE SPACE TELESCOPE OBSERVATIONS OF GRAVITATIONALLY LENSED FEATURES IN THE RICH CLUSTER AC 114 <i>Ian Smail, Warrick J. Couch, Richard S. Ellis, &amp; Ray M. Sharples</i>	501	50-B10
ANALYTIC ERROR ESTIMATES <i>Andrew Gould</i>	510	50-C10
DISCOVERY OF A $z = 2.76$ DUSTY RADIO GALAXY? <i>Arjun Dey, Hyron Spinrad, &amp; Mark Dickinson</i>	515	50-D5
HIGH-ENERGY GAMMA-RAY EMISSION FROM ACTIVE GALAXIES: EGRET OBSERVATIONS AND THEIR IMPLICATIONS <i>C. von Montigny, D. L. Bertsch, J. Chiang, B. L. Dingus, J. A. Esposito, C. E. Fichtel, J. M. Fierro, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, Y. C. Lin, J. R. Mattox, H. A. Mayer-Hasselwander, P. F. Michelson, P. L. Nolan, H. D. Radecke, E. Schneid, P. Sreekumar, D. J. Thompson, &amp; T. Willis</i>	525	50-E4
MODELS OF GALAXIES WITH CENTRAL BLACK HOLES: ADIABATIC GROWTH IN SPHERICAL GALAXIES <i>Gerald D. Quinlan, Lars Hernquist, &amp; Steinn Sigurdsson</i>	554	50-G8
THE NATURE OF SEYFERT 2 GALAXIES WITH OBSCURED BROAD-LINE REGIONS. I. OBSERVATIONS <i>Hien D. Tran</i>	565	51-A8
THE NATURE OF SEYFERT 2 GALAXIES WITH OBSCURED BROAD-LINE REGIONS. II. INDIVIDUAL OBJECTS <i>Hien D. Tran</i>	578	51-B10
THE NATURE OF SEYFERT 2 GALAXIES WITH OBSCURED BROAD-LINE REGIONS. III. INTERPRETATION <i>Hien D. Tran</i>	597	51-D4
RELATION BETWEEN O VI EMISSION AND X-RAY INTENSITY IN ACTIVE GALACTIC NUCLEI <i>Wei Zheng, Gerard A. Kriss, &amp; Arthur F. Davidsen</i>	606	51-E2
EMISSION SPECTRUM INTEGRATED OVER AN ACCRETION DISK: COMPARISON WITH OBSERVATIONS OF ACTIVE GALACTIC NUCLEI <i>Toshiya Shimura &amp; Fumio Takahara</i>	610	51-E9
DETECTION OF A SUBPARSEC DIAMETER DISK IN THE NUCLEUS OF NGC 4258 <i>L. J. Greenhill, D. R. Jiang, J. M. Moran, M. J. Reid, K. Y. Lo, &amp; M. J. Claussen</i>	619	51-F8
Fe II AND Fe I EMISSION IN IRAS 07598+6508 AND PHL 1092 <i>John Kwan, Fu-zhen Cheng, Li-zhi Fang, Wei Zheng, &amp; Jian Ge</i>	628	51-G6
GLOBAL MODELS OF THE INTERSTELLAR MEDIUM IN DISK GALAXIES <i>Alexander Rosen &amp; Joel N. Bregman</i>	634	52-A2
ON THE FORMATION OF GLOBULAR CLUSTERS. II. EARLY DYNAMICAL EVOLUTION <i>J. H. Brown, A. Burkert, &amp; J. W. Truran</i>	666	52-D4
TURBULENT DIFFUSION AND ITS EFFECTS ON THE CHEMISTRY OF MOLECULAR CLOUDS <i>Taoling Xie, Mark Allen, &amp; William D. Langer</i>	674	52-E1
ALFVÉN WAVES IN INTERSTELLAR GASDYNAMICS <i>Christopher F. McKee &amp; Ellen G. Zweibel</i>	686	52-F2

	Page	Fiche
THE GALACTIC DISTRIBUTION OF ALIPHATIC HYDROCARBONS IN THE DIFFUSE INTERSTELLAR MEDIUM <i>Scott A. Sandford, Yvonne J. Pendleton, &amp; Louis J. Allamandola</i>	697	52-G2
THE THREE-DIMENSIONAL STRUCTURE OF THE CASSIOPEIA A SUPERNOVA REMNANT. I. THE SPHERICAL SHELL <i>Jeri E. Reed, J. Jeff Hester, A. C. Fabian, &amp; P. F. Winkler</i>	706	53-A1
A NEAR-INFRARED REFLECTION NEBULA ASSOCIATED WITH NGC 2024 FIR 4 <i>T. J. T. Moore &amp; T. Yamashita</i>	722	53-B6
HCN EMISSION FROM BRIGHT CARBON STARS: THE GROUND STATE MASERS AND PECULIAR BROAD FEATURES <i>Hideyuki Izumiura, Nobuharu Ukita, &amp; Takashi Tsuji</i>	728	53-C1
LOCAL THREE-DIMENSIONAL MAGNETOHYDRODYNAMIC SIMULATIONS OF ACCRETION DISKS <i>John F. Hawley, Charles F. Gammie, &amp; Steven A. Balbus</i>	742	53-D4
COMPOSITE SPECTRA IN YOUNG STARS: ACCRETION OR CLOSE COMPANIONS? <i>Chris D. Koresko</i>	764	53-F1
OSCILLATORY MODES IN NEAR-CRITICAL ACCRETION FLOWS <i>Guy S. Miller &amp; Myeong-Gu Park</i>	771	53-F11
MERIDIONAL CIRCULATION IN ROTATING STARS. XI. SINGLE-CELL PATTERN VERSUS DOUBLE-CELL PATTERN <i>Monique Tassoul &amp; Jean-Louis Tassoul</i>	789	54-A4
THE SOBOLEV OPTICAL DEPTH FOR TIME-DEPENDENT RELATIVISTIC SYSTEMS <i>David J. Jeffery</i>	810	54-C1
THE CONVERSION OF TWO-FLAVOR TO THREE-FLAVOR QUARK MATTER IN A SUPERNOVA CORE <i>Zigao Dai, Qiuhe Peng, &amp; Tan Lu</i>	815	54-C9
REMARKS ON THE POLARIZATION OBSERVED IN SN 1993J <i>Peter Höflich</i>	821	54-D4
SCREENING EFFECTS ON NONRELATIVISTIC BREMSSTRAHLUNG IN THE SCATTERING OF ELECTRONS BY NEUTRAL ATOMS <i>Young-Dae Jung &amp; Kun-Sang Lee</i>	830	54-E2
THE LONG-PERIOD AM HERCULIS-LIKE CATAclysmic VARIABLE RXJ 051541+0104.6 <i>Frederick M. Walter, Scott J. Wolk, &amp; Nancy R. Adams</i>	834	54-E10
EXOSAT OBSERVATIONS OF THE LOW-LUMINOSITY X-RAY BURSTER 4U 0614+091: EVIDENCE FOR A HARD POWER-LAW TAIL <i>Didier Barret &amp; Jonathan E. Grindlay</i>	841	54-F6
ROSAT PSPC OBSERVATIONS OF THE SYMBIOTIC CH CYGNI <i>D. A. Leahy &amp; K. Volk</i>	847	54-G1
A RADIAL VELOCITY STUDY OF THE DWARF NOVA AR ANDROMEDAE: COMPARISON OF THE QUIESCENT AND OUTBURST STATES <i>A. W. Shafter, J. M. Veal, &amp; E. L. Robinson</i>	853	54-G10
THE GROWTH OF SOLIDS, DESTRUCTION OF MOLECULES, AND SHIELDING OF RADIATION IN THE YOUNG STELLAR DISK OF HD 45677 <i>Thomas M. Brown, Richard Buss, Jr., Carol Grady, &amp; Karen Bjorkman</i>	865	55-A11
LkHa 198 REVISITED <i>Harold M. Butner &amp; Antonella Natta</i>	874	55-B10
TEST OF WHEN FREE PRECESSION OF A PULSAR CANNOT MIMIC AN ORBITING PLANET <i>Norman K. Glendinning</i>	881	55-C6
A VOLCANIC ORIGIN FOR HIGH-FIP MATERIAL IN THE SOLAR ATMOSPHERE <i>N. R. Sheeley, Jr.</i>	884	55-C12
TESTING THE DC-ELECTRIC FIELD MODEL IN A SOLAR FLARE OBSERVED BY YOHKOH AND THE COMPTON GAMMA-RAY OBSERVATORY <i>D. M. Zarro, J. T. Mariska, &amp; B. R. Dennis</i>	888	55-D8
THE MAGNETIC EVOLUTION OF AR 6555 WHICH LED TO TWO IMPULSIVE, RELATIVELY COMPACT, X-TYPE FLARES <i>J. M. Fontenla, A. Ambastha, B. Kalman, &amp; Gy. Csepura</i>	894	55-E4
ERRATUM		
H II REGIONS IN M81 GROUP DWARF GALAXIES <i>Bryan W. Miller &amp; Paul Hodge</i>	907	55-F9

# CONTENTS

vii

	Page	Fiche
ABSTRACTS OF THE ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES, 1995 MARCH		
THE HUBBLE SPACE TELESCOPE QUASAR ABSORPTION LINE KEY PROJECT. X. GALACTIC H I 21 CENTIMETER EMISSION TOWARD 143 QUASARS AND ACTIVE GALACTIC NUCLEI <i>Felix J. Lockman &amp; Blair D. Savage</i>	908	55-F13
ON THE ABUNDANCE OF PRIMORDIAL HELIUM <i>Keith A. Olive &amp; Gary Steigman</i>	908	55-F13
AUTOMATED SOFTWARE FOR SURFACE PHOTOMETRY OF GALAXIES <i>M. Doi, M. Fukugita, &amp; S. Okamura</i>	909	55-F14
AUTOMATED SURFACE PHOTOMETRY FOR THE COMA CLUSTER GALAXIES: THE CATALOG <i>M. Doi, M. Fukugita, S. Okamura, &amp; K. Tarusawa</i>	909	55-F14
IONIZED GAS IN THE HALOS OF EDGE-ON, STARBURST GALAXIES: DATA AND RESULTS <i>Matthew D. Lehnert &amp; Timothy M. Heckman</i>	909	55-F14
ULTRAVIOLET TO NEAR-INFRARED SPECTRAL DISTRIBUTIONS OF STAR-FORMING AND SEYFERT 2 GALAXIES <i>Thaisa Storchi-Bergmann, Anne L. Kinney, &amp; Peter Challis</i>	910	55-G1
A MULTIPARAMETRIC ANALYSIS OF THE EINSTEIN SAMPLE OF EARLY-TYPE GALAXIES. I. LUMINOSITY AND ISM PARAMETERS <i>Paul B. Eskridge, Giuseppina Fabbiano, &amp; Dong-Woo Kim</i>	910	55-G1
A SPECTROSCOPIC DATABASE FOR STEPHENSON-SANDULEAK SOUTHERN LUMINOUS STARS <i>B. Cameron Reed &amp; Amy E. Beatty</i>	910	55-G1
INDEX TO VOLUMES 438-440, PARTS 1 AND 2	i	55-G5